Shapes (Orienteering)

National Science Teaching Standards
    A. Science as **INQUIRY**
    B. PHYSICAL Science
    C. LIFE Science
    E. Science **TECHNOLOGY**
    F. Science in **PERSONAL** and **SOCIAL PERSPECTIVE**
    G. HISTORY and **NATURE** of Science

Background Information:
       "Shapes" is an activity in which a set bearings is given to each student. The object of the activity is to begin and end at the same point. If the beginning and ending points are close to the same spot, the activity is a success!

Objective:
- The student will set the given bearings and follow the directional arrow to make a shape (square, triangle, rectangle).
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Pre Activity:
- Research the tools used through history for navigation.
- Review the directions: North, South, East, and West; know the intermediate directions: Northeast, Northwest, Southeast, Southwest. Play the old game "Simon Says" using the above directions.

Equipment:
- Compass for each student
- Slips of paper with bearings printed on them (square, triangle, rectangle)

Procedure:
1. Demonstrate how to do one shape. Pick a starting point and use something to mark that spot so you will know if you returned to the same spot! Set your first bearing; walk it. Emphasize taking the same size steps…taking some giant leaps and some baby steps will not work! Even pacing is needed. Set the next bearing, walk and so on. You should return to the starting point. What shape did I make?
2. Pass out one sheet to each student. Have them set the bearing, walk, etc. After he/she has completed the first shape successfully have them try the others. Students should try all three shapes. Instructor and chaperones should walk around and find

the students that need help…i.e. students not making a shape, or walking in a straight line.

Square: Each length has equal number of steps. Each bearing is separated by 90 degrees:
0 degrees –10 steps
90 degrees – 10 steps
180 degrees – 10 steps
270 degrees – 10 steps

Rectangle: Two sides of the shape are equal in length, and the other two sides are longer and equal in length. Each bearing is separated by 90 degrees:
0 degrees- 10 steps
90 degrees – 30 steps
180 degrees – 10 steps
270 degrees – 30 steps

Triangle: All sides of the shape are equal in length. Each bearing is separated by 120 degrees:
40 degrees – 10 steps
160 degrees – 10 steps
280 degrees – 10 steps

Post Activity:
- If compasses are available, go to playground and practice setting bearings and following them.
- If compasses are not available, using directions and intermediate directions, have students create a "treasure hunt." Give each student a piece of wrapped candy or a new pencil. The student finds a place to put it on the playground. The student then creates the hunt by choosing a starting point, walking a designated number of steps in a designated direction, then students follows the next set of steps and direction, and so on until he/she is lead back to the "treasure." Each student should create a treasure map as he/she is mapping out the number of steps and the direction of travel. Have students switch treasure maps to see if they can find the treasure using another student's map!

Post Discussion:
- Discuss the problems you had using a compass.
- Discuss how just having a compass if you are lost does not help you! You also need a topographical map to get your bearings from.
- Discuss how early explorers must have felt going off into "unknown" territories.
- Talk about explorer of today (astronauts, deep sea explorers) must feel exploring.
- Research some of the tools used of the past and present to help explorers find their way. Share that information.